

# Data Science Salary Analysis from 2021 Onwards

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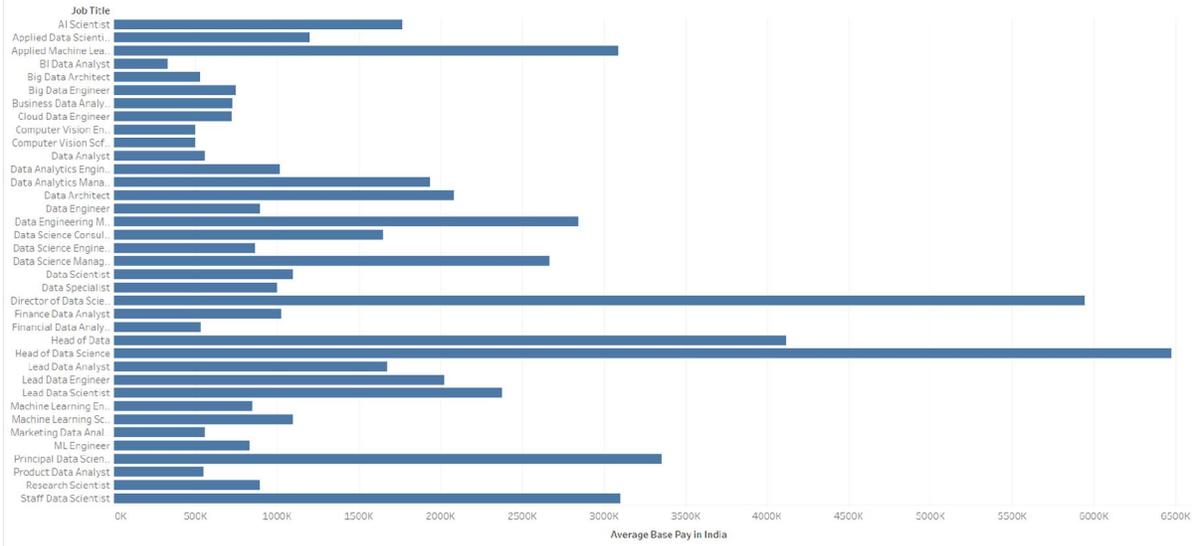
**Abstract:** *In the paper, we will discuss the various job opportunities that are available in the field of Data Science. Since, I have stated various jobs, I must specify that there are around 43 types of jobs available in the field. The main purpose of this research review paper is to show the variations in the salaries of the various branches of Data Science analyzed on the basis of year 2020/2021 survey. The variations further depend on the skills or softwares that are increasing their values in the field. The research is based on a data set taken from an open-source - “Kaggle” as well as online survey for various sites. I have examined various other review papers Some of the tools, that is, SQL, Excel, R and Python are still at the top of the list. As its stated in recent headlines that the tech workers are being paid same salaries as compare to the medical workers in US. Some of the cloud computing (AWS) have received an high approach. In fact, equal participation is received by women when it comes to Data Science which is discussed in this paper too. Though, the participation is equal, women are being paid less. To explain more specifically, Visualization is the medium which is used as images works more efficiently than words.*

**Keywords:** Types, Visualization, Gender gap, Skills, Salaries

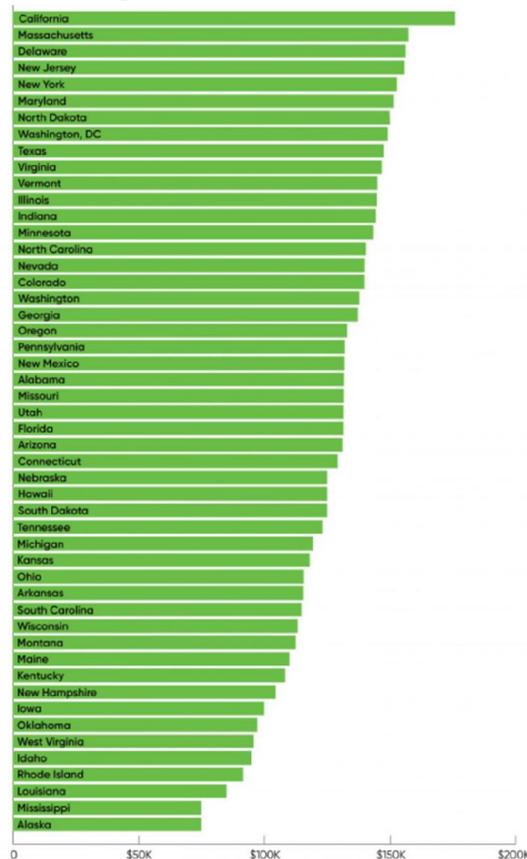
## I. INTRODUCTION

Data Science is considered as “The Sexiest Job of 21st Century” by one of the most prestigious universities in America, that is, Harvard University. It is the basic requirement of every industry either its civil, technical, medical, or pharmaceutical, etc. By the time, each and every data that was collected by the long running industries had piled up enough in number that they require a professional to handle it and helps to find out the mistakes that causes loss or failure to the industry and find the solution to this situation too. The field that manages such issues was named as Data Science. For example: In India, Reliance company launched a telecommunication company and named it as Reliance Jio Infocomm Limited, in which they provided free internet connections to people of India. The main reason considered behind was to collect data to analysis, while analyzing data after providing free network to people it was observed that the consumption of social sites like Facebook, Instagram, Snapchat, etc is increased more than 70% which was a direct profit to the companies worldwide. Sample Heading (Third Level). Only two levels of headings should be numbered. Lower-level headings remain unnumbered; they are formatted as run-in headings.

Every industry consists of data or we can address by saying that data is the nucleus and the company is the structure. The quantity of data have reached on higher level in the last few years. Let us consider an example of the pandemic, the whole world was going through serious crises. Everyday around thousands of people were losing their lives and we were provided with the current death rate just because of data science. The data from healthcare industry all over the world was gathered simultaneously and was processed to attain the best outcome for better conditions. Whatever we do on the social media platform, or each and every transaction we make is recorded in the database in the form of data. Have you ever noticed how does Netflix/ Amazon prime knows what genre we are interested in. It’s the Machine learning cum Artificial intelligence operated on the existed data which let it do so. So, upcoming era revolves all around data and to handle it we require a high range of data science enthusiasts. Moreover, I listed numerous tasks that are performed by the data science candidates, so it’s obvious that the pay they deserve is enormous after they can somehow technically predict the future of any industry.



Similarly, for the year 2021 oreilly did a Data/AI Salary Survey, in which they have mentioned the salaries variations in different states of United States. As shown in the figure bellow, the average salary of an Data Science enthusiast has been displayed according to which California is considered as the highest paid state whereas Alaska being the lowest one. Moreover, the data wasn't considered that accurate as most of the respondents were from California state and the ones who received the least place i.e. Alaska, Mississippi, etc. can be because of the least response from the respondents. So, the survey did not appreciate the considered positions that much.





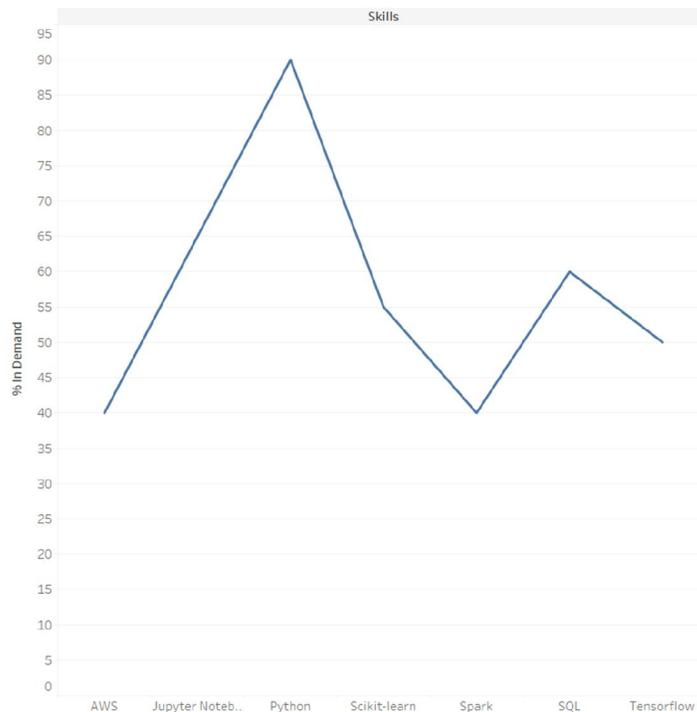
1.1 Different Skills/Tools Available In The Field

As we begin with skills or tools that are included in the field, the list goes on and on. Since, every day something new gets into the market and even the developed tools are getting updated with further inventions. When it comes to Analytics, Python is still a primary skill and received a rise of 4% in the term of salary as per the survey performed by AIM & AnalytixLabs.

Further, including that the professionals who are specialised in Hadoop went through the highest decline when it comes to their average salary. To make it clearer, when it comes to Data Science the skill set can be divided into two types: Technical and Non-Technical Skills. The Non-Technical sector can be explained as the one that corresponds to Strong Business Acumen and Strong Communication Skills. Whereas when it comes to Technical, the list is quite long. The main technical skills that played an essential role in the field can be listed as: Statistical analysis and computing, Machine Learning, Deep Learning, Processing large data sets, Data Visualization, Data Wrangling, Mathematics, Programming, Statistics, Big Data. There are various jobs in the field that does not require a programming language knowledge for example Project Manager, Business Analyst, etc. So, it's a myth that if you didn't learn any programming language, you cannot get a job in the field.

Cloud computing have highly affected the job culture. As per the research done, it is estimated that in the upcoming year Cloud Computing Engineer or fields related to cloud computing is in the top of the salary list of job family which is a major change. People who have got the certification of cloud have received enormous hike in their salary. Though, it is being observed that many people have got a raise after attaining certain certificates. Many prestigious organizations are offering online certifications like Google, Harvard-edx, IBM etc. which made people develop or enhance their skills.

Structured Query Language (SQL) and Python are somehow considered as the basics of Data Analyst Job position. The amount of data collected by certain companies in such a huge amount That Even If One Wants To, He/She Cannot Handle them without these tools.



1.2 Salary Variations among Different Industries

The data collected from different surveys and review papers stated that in the year 2022 in India each and every industry has experienced a massive increase in the average salary. Though, the year 2021 was part of a pandemic which effected



several industries highly. Other than telecom, every other industry faced a major setback. But after the pandemic, the industries have gone through many impressive changes. In the figure shown below, e-commerce has experienced the highest hype. In the last year, telecom was ahead every other industry but this time e-commerce has shattered the records and came first in the list. Moreover, the telecom department has experienced a slight increase as compare to the others. This analysis is related to the industries situated in India.



When it comes to United states, the industries over their faced variations too. As per surveys done by Oreilly, the figure below shows that the computer/ hardware and Cloud services/hosting/CDN secure the top place in getting the maximum salary. On the other side, Education and Non-profit Trade departments gets the bottom position. During the pandemic, the healthcare/ pharmaceuticals gained a priority in the list.

Since, we our discussing about the industries and positions, it's been an impressive analysis that both the IT sector and the doctors from the medical field are receiving almost similar average base salary. So, Data Science job family is the first to compete with the medical sector when it comes to salaries and this have let many surprised.

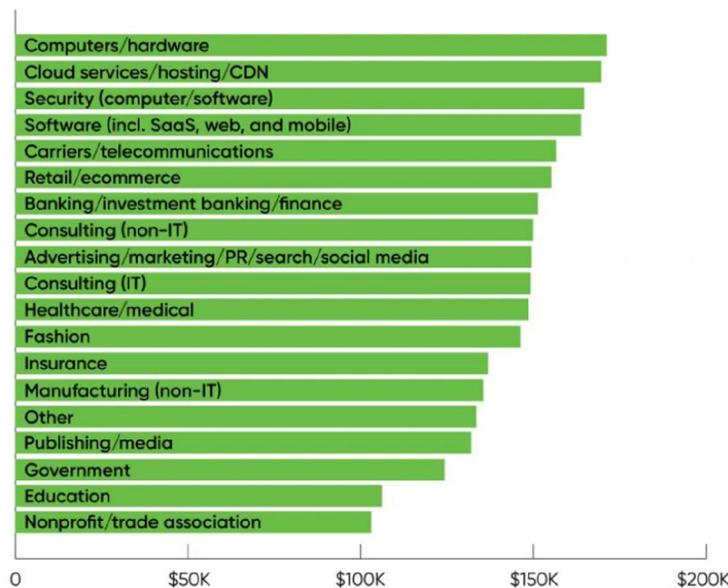


Figure 7. Average salary by Industry



1.3 Gender Variation

To nobody’s surprise, Gender Biasedness is the most significant issue in the industries. Women with similar education, experience and work are being paid way less than men. Though, high tech companies, like Amazon are launching certain openings and training which are women oriented but at the moment when the companies have to be fair during their salary compensation, justice is not granted. Equal work is directly proportional to equal salary, so the question is what the companies have planned to resolve this conflict. In India, a huge number of women populations is affected with this issue. Recently, while researching about the situation I came to acknowledge that even most the companies recruit women in a highly less number. Though when we go through open-source platforms or competitions., the involvement of women is same as that of men.

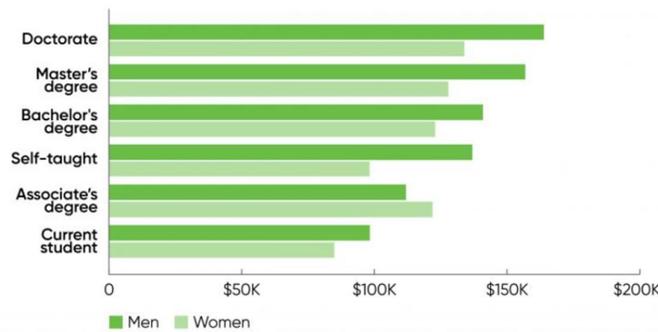


Figure 1. Women's and men's salaries by degree

The Survey performed by oreilly showed that the average salary of women is 84% of average salary of men in United States. By the graph shown below they illustrated their analysis, which signifies that only in the case of Associate degree, women are being paid more than men which too is not acceptable if they are doing the same work at the same education or experience level. In the chart, it is clear that none of the education level pays equal amount of salary to the people.

II. CONCLUSION

In conclusion, the analysis has received various variation out of which the maximum was observed to the pandemic. After the pandemic (COVID-19), the salaries observed a major hike in several departments.

Further, the tools and skills play a major role in the field. Every skill have its own worth. It is a never-ending process of learning a specific tool as every tool is being modified by scientist each day. Cloud computing like AWS have brought a drastic change providing a great compensation to people. Since, in the era of online education, it has become even easier to learn and advance our skills anytime anywhere. In addition to the gender gap that were faced by women during salary compensation have been rendered a bit as compare to previous years. To receive 16% less than the average base salary for the same position with the same amount of work and skills is clearly unacceptable and we are expecting for a better result for the upcoming years. Almost every industry has experienced a huge percentage change in the wages. Earlier in the year 2021, e-commerce and medical industries were offering less as compare to other departments but in the year 2022 both the industries are ranked in the top of the list for paying sufficient salaries to the employees.

However, we are expecting a further increase in the Data Science department in the upcoming years due to the increase demand. Almost every industry is offering their highest to the individuals for the skills and enthusiasm.

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